

REMARKS

This response is submitted in reply to the Office Action mailed on August 15, 2007 ("the Action"). Claims 1-25 are pending in the application.

I. The § 102(b) Rejections

The Action rejects Claims 1-12, 16-22 and 25 as being anticipated by U.S. Patent No. 5,178,159 to Christian ("Christian"). Applicant respectfully submits that Christian fails to teach or suggest an MRI guidewire antenna as recited in Claim 1 or the MRI compatible coaxial cable as recited in Claim 25. Indeed, Applicant was unable to find any mention of MRI or MRI applications anywhere in the patent. The only imaging modality mentioned by Christian is ultrasound (col. 11, lines 60 et seq. to col. 12, line 23, col. 2, line 52).

With respect to Claims 1-12 and 16-22, the MRI guidewire antenna conducts MRI signals detected by the antenna to the MRI scanner for processing, such as, for example, to generate images as described on pp. 2-12 of the instant application. Notably, Christian proposes a guide assembly in which the guidewire has two or more conductors 16, 17 (col. 3, lines 7-18) that are enclosed or housed, *e.g.*, "[i]f 2 or more conductors are desired in the guidewire assembly..." (col. 9, lines 29-37). Christian also proposes a flexible cable with internal first and second conductors 21, 22 (col. 3, lines 22-24).

However, the Action alleges that Figure 7 illustrates an outer coaxial conductor 99 (Action, p. 2) and cites to col. 6, line 55-col. 7, line 28 and col. 6, lines 52-54) in support of this statement. Applicant respectfully disagrees. The text at these cited passages describes a guidewire with hypo tubing 96 and a core wire 97 which is for increased torquing capabilities. Christian states that the core wire need not be conductive, as conductors 98, 99 are provided which run the length of the guidewire 92 and connect to a transducer or other electrical device. The conductors 98, 99 are "disposed in the concentric space provided between the core wire 97 and the inside wall of the tubing 9." (emphasis added). The text at col. 6, lines 53-54, describes a coaxial construction of the male and female connectors. Applicant respectfully submits that the conductors 98, 99 reside in a concentric space, but are not coaxially arranged. The guide assembly of Christian is very different from a coaxial cable line

involving a shield (outer conductor) and inner (center) conductor, just as the "old-style" twin-feed antenna wire used for televisions is different from a coaxial TV antenna lead. Independent Claims 1 and 25 are stated below for ease of reference.

1. A magnetic resonance imaging (MRI) guidewire, comprising:
an inner conductor;
an outer conductor coaxially disposed about the inner conductor;
a distal end sized and shaped for insertion into a subject to receive MRI signals; and
a proximal end sized and shaped for insertion into a connector, the proximal end having:
an outer conductor contact coupled electrically to the outer conductor; and
an extended section of the inner conductor that extends axially beyond the outer conductor contact, the extended section including:
an inner conductor contact having an electrically conductive material disposed at least partially around the inner conductor; and
an insulated area interposed between the outer conductive contact and the inner conductive contact, and having an electrically insulating material disposed at least partially around the inner conductor,
wherein the distal end of the guidewire defines an antenna configured to detect MRI signals and the inner and outer conductors are configured to conduct the detected MRI signals to the proximal end of the guidewire.

25. An MRI compatible coaxial cable, comprising:
an inner conductor;
an outer conductor coaxially disposed about the inner conductor;
and
a proximal end sized and shaped for insertion into a connector, the proximal end having:
an outer conductor contact coupled electrically to the outer conductor; and
an extended section of the inner conductor that extends axially beyond the outer conductor contact, the extended section including:
an inner conductor contact having an electrically conductive material disposed at least partially around the inner conductor; and

an insulated area positioned to isolate electrically the outer conductive contact from the inner conductive contact, and having an electrically insulating material disposed at least partially around the inner conductor,

wherein the coaxial cable is configured to conduct MRI signals.

In contrast to the conductors 16, 17 or 21, 23 or 98, 99 of Christian, and as emphasized above, Claims 1 and 25 recite an outer conductor that is coaxially disposed about the inner conductor. Claims 1 and 25 also recite that the guidewire (Claim 1) and coaxial cable (Claim 25) are configured to conduct MRI signals. That is, Christian proposes conducting leads that are on the inside of a guidewire assembly. As recited in Claim 1, in some embodiments of the present invention, the guidewire conductor(s) are formed to serve the dual purpose of being both a guidewire and an antenna with the conductors conducting the MRI signals.

Applicant respectfully submits that Christian (as well as U.S. Patent No. 5,743,903 to Stern ("Stern '903")) fails to teach or suggest an MRI compatible device, and does not even describe or mention MRI, much less a device that conducts RF/MRI signal.

In view of the above, Applicant respectfully submits that Christian fails to anticipate the pending claims and requests that these rejections be withdrawn.

II. The § 103 Rejections of Claims 13-15

The Action rejects Claims 13-15 as being unpatentable over Christian in view of U.S. Patent Publication No. 2002/0045816 to Atalar (now 6,628,980) (Atalar). The Action concedes that Christian fails to teach a guidewire with a superelastic material. However, the Action states that Atalar teaches this feature/material and alleges that one of skill in the art would have modified the device of Christian with a superelastic material to provide "a very high degree of 'memory'".

First, Applicant respectfully submits that Atalar fails to remedy the deficiencies of Christian as noted above. Christian does not describe a guidewire formed into a coaxial line

for the purpose of conducting MRI signals. Therefore, even combined the references fail to teach or suggest the claimed invention. Atalar does not describe a guidewire, but a sleeve involving tubular members that permit deployment of various expanding MRI antenna devices (Figures 1-9, etc).

In view of the foregoing, Applicant respectfully submits that the claims are patentable over the cited prior art.

III. The § 103 Rejections of Claims 23 and 24

The Action rejects Claims 23 and 24 as being unpatentable over Christian in view of U.S. Patent No. 5,743,903 to Stern ("Stern"). However, as noted above, Christian does not describe a guidewire formed into a coaxial line for the purpose of conducting MRI signals. Stern fails to remedy the deficiencies of Christian.

In addition, Stern does not describe an MRI guidewire antenna, but instead proposes a cardiac ablation system. The purpose of the identification parameter (*e.g.*, resistor(s)) described in columns 13 and 14 of Stern is to produce an identification signal representing the electrode type when the catheter is connected to the generating means (col. 13 lines 56-6) to set the appropriate power conditions for the RF ablation (col. 13, lines 63-67; col 14 lines 1-46).

In contrast, the purpose of the "identification parameter" as recited in Claims 23 and 24 is to provide a means for the MRI scanner to identify that there is a guidewire or coaxial cable connected to the MRI scanner as a receiver of MRI signals and/or to determine that the proper guidewire and connector combination is being used or for single-use control (p. 28 lines 12-22). Because Stern '903 has no MRI system, one of skill in the art would not have combined Stern's heating adjustment components (*e.g.*, resistors) with the guidewire as claimed, absent the teachings of the present invention.

In view of the foregoing, Applicant respectfully submits that Claims 23 and 24 are patentable over the cited prior art.

IV. New Dependent Claims 26-38

Applicant has added new dependent claims to form a more complete claim set. Applicant respectfully submits that the claims are patentable over the cited prior art and are supported by the figures and/or specification. For example, p. 28 describes that the identification parameter can assure that proper guidewire and connector combination is used or that for "single-use" control, and p. 24 describes that the MRI scanner interface circuit can reside in the connector that is attached to the guidewire and that the connector comprises electrical shielding configured to inhibit RF interference when the guidewire is in operative use in an MRI scanner. Page 23 (and other locations of the application) describe that the connector can be releasably attachable to the outer and inner conductors whereby different medical devices can be serially removed from and attached to the guidewire.

V. Supplemental Information Disclosure Statement (IDS)

Applicant is also submitting an IDS herewith. Consideration and return of an initialed copy of the IDS confirming same, is respectfully requested.

CONCLUSION

Accordingly, Applicant submits that the present application is in condition for allowance and the same is earnestly solicited. Should the Examiner have any matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

Respectfully submitted,

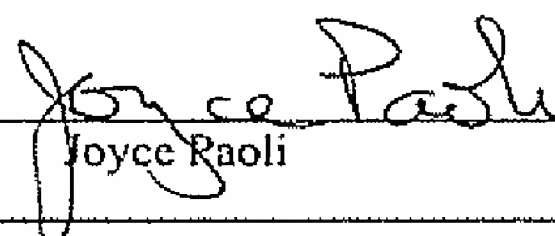


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CERTIFICATION OF TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on December 4, 2007.

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